

ABSTRACT OF THE DISCLOSURE

An optical device includes a plurality of metallic stripes, arranged in a substantially planar, subwavelength grating having a laterally varying, continuous grating vector, deposited on a substrate such as GaAs or ZnSe. When used as a polarizer, the device passes a laterally uniform polarized beam of electromagnetic radiation incident thereon with a predetermined, laterally varying transmissivity. When used to effect polarization state transformation, the device transforms a beam of electromagnetic radiation incident thereon into a transmitted beam having a predetermined, laterally varying polarization state. The device can be used to provide radially polarized electromagnetic radiation for accelerating subatomic particles or for cutting a workpiece. The device also can be used, in conjunction with a mechanism for measuring the lateral variation of the intensity of the transmitted beam, for measuring the polarization state of the incident beam.